

Appl. No. : 09/705,589
Filed: 11/03/2000
Office Action Dated: 8/17/2004

Remarks

The Office Action dated August 17, 2004 has been received and duly noted.

Claim 1 has been amended to recite "improving a drill bit assembly design" in the preamble. This change should overcome the objection noted by the Examiner, since the process of selecting the best of two calculated rates of penetration results in a drill bit assembly design which is improved compared to the non-selected design. With respect to the Examiner's comments, the two measurements may not result in the most desired rate of penetration. The last paragraph of Claim 1 has been amended to recite that the selected drill bit assembly design has the calculated rate of penetration.

The rejection of Claims 1-16 on the basis of U.S. Patent 5,865,798 is respectfully traversed. First, the '798 Patent is not directed to improving a drill bit assembly design for drilling a well bore section, as recited in the preamble of Claim 1. Instead, this reference is directed to an automated control system for a drilling process, in which an operator sets a rotary torque set point. The Examiner notes that the reference does not describe a process which calculates a first and a second rate of penetration as recited in the claims. With the modification of the preamble of Claim 1, this feature alone should be sufficient to patentably distinguish Claim 1 from the prior art. The reference fails to provide any teaching for determining characteristics of a formation along a trajectory through which a well bore is to be drilled in order to perform calculated rates of penetrations. The reference does not teach modifying a depth of cut parameter of

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the first drill bit assembly design to provide a subsequent drill bit assembly design, as recited in Claim 1. Finally, the '798 Patent does not teach selecting a selected drill bit assembly design from the two designs having the calculated rates of penetration. The '798 reference further fails to teach the features as specifically set forth in Claims 2, 3, 8-11.

U.S. Patent 4,760,735 is not directed to improving a drill bit assembly design for drilling a well bore section. The reference teaches taking various measurements and making comparisons in real time to diagnose drilling conditions. Various torque and drag measurements may be made and plotted as a function of depth, but the reference does not teach a procedure for improving a drill bit design utilizing the calculated rates of penetration from two different designs, as recited in Claim 1.

U.S. Patent 4,974,534 is directed to a technique for drilling a well by providing various drilling data in real time. The patent does not disclose or suggest the method as set forth in Claim 1.

U.S. Patent 5,415,030 is directed to a technique for evaluating rates of penetrations and bit conditions. The information is used to optimize the drilling process, but there is no teaching to improving a bit assembly design or calculating the rates of penetrations, as set forth in Claim 1.

U.S. Patent 6,408,953 is directed to predicting the performance of a drilling system, thereby better controlling the drilling of a well bore. The reference does not

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teach a method of improving a drill bit assembly design as recited in Claim 1.

In view of the above, early allowance of this application is requested.

Respectfully submitted,


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CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence and all referenced enclosures are being deposited by me via facsimile to (703) 872-9306, attention Examiner Albert W. Paladini at the United States Patent and Trademark Office, on this the 24th day of August, 2004.

By:


Martha Jeffers